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Investigation of the relationship between blockchain and investment: a systematic literature review and future research direction

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Abstract

Purpose – This study presents a systematic review of the literature discussing the relationship between blockchain technology and investment, with the aim of identifying trends, key themes and potential directions for future research.

Design/methodology/approach – This research employs a systematic literature review (SLR) with the preferred reporting items for systematic reviews and meta-analyses framework and content analysis. Data were collected from the Scopus database and 58 relevant articles were selected based on inclusion and exclusion criteria for a detailed review and analysis.

Findings – The findings indicate an increasing research trend on blockchain and investment from 2019 to 2025, with most studies published in leading journals such as *Ocean and Coastal Management*, *Sustainability* and *Journal of Computational and Applied Mathematics*. Major themes include blockchain challenges, small and medium-sized enterprise financing, integration and social investment (e.g. zakat management, CWLS and social business models), providing direction for further research.

Research limitations/implications – This study contributes to financial institutions and establishes good governance and develops blockchain-based investment models to strengthen transparency, efficiency and trust. The government also needs to provide investment regulations for socio-economic development and legal guarantees for investment.

Practical implications – This study provides strategic guidance for investors, policymakers and financial institutions in adopting blockchain-based systems to strengthen transparency, governance and efficiency. These insights also support the creation of a sustainable and inclusive investment ecosystem.

Originality/value – This study is the first to investigate blockchain and investment using a SLR method from the Scopus database.

Keywords Blockchain technology, Investment, Systematic literature review, Future research direction

Paper type Literature review

1. Introduction

Blockchain technology has emerged as a disruptive innovation with the potential to transform investment decision-making across various sectors (Morales-Alarcón, Bodero-Poveda,

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Villa-Yánez, & Buñay-Guisñan, 2024). Its decentralized, transparent and immutable characteristics enhance trust, reduce transaction costs and improve operational efficiency (Li, Ma, Shi, & Zhu, 2022; Liu, Zhang, & Zhao, 2021b). Blockchain has been proven to enhance supply chain traceability, ensure compliance with environmental regulations and improve resource allocation in the context of green investment (Liu *et al.*, 2021b; Xu & Duan, 2022). Similarly, blockchain adoption correlates with enhanced investment efficiency and lower agency costs in corporate finance (Autore, Clarke, & Jiang, 2021; Du, Shi, Li, & Chen, 2023). Although blockchain has significant potential, integrating it into the investment framework remains a complex and evolving process. Challenges such as scalability, regulatory uncertainty and high implementation costs hinder widespread adoption (Kumari & Devi, 2023; Wen, Yue, Li, Xiu, & Zhong, 2022). Moreover, the limited understanding of blockchain's influence on investment decisions across various industries highlights the need for a comprehensive review of existing literature. This study aims to bridge the gap by synthesizing findings from various fields, including supply chain management, corporate finance and sustainable development, to provide a comprehensive understanding of the relationship between blockchain and investment.

Unlike previous reviews that focused on blockchain applications such as accounting, supply chains or digital finance, this study combines findings from various fields to develop a comprehensive interpretation of how blockchain affects investment mechanisms and outcomes. This distinction reinforces the originality of this review as the first to systematically analyze the blockchain–investment relationship using data from the Scopus database.

Although blockchain technology provides substantial benefits for investment decision-making, several obstacles impede its effective implementation. For instance, the high initial cost of blockchain adoption may restrict small and medium-sized enterprises (SMEs) from capitalizing on its advantages (Kumari & Devi, 2023). Furthermore, the absence of a standard regulatory framework causes uncertainty for stakeholders, especially in cross-border transactions (Shishehgarkhaneh, Moehler, & Moradinia, 2023). In green investing, blockchain's potential to enhance transparency and minimize fraud is frequently challenged by concerns regarding privacy and data protection (Ezzi, Abida, & Jarboui, 2023). For example, although blockchain can enhance the traceability of supply chain investments, its reliance on a decentralized network may expose sensitive information to unauthorized parties (Liu, 2022). Furthermore, the complexity of integrating blockchain with current systems becomes a major barrier to its adoption, especially in industries with long-established legacy infrastructure (Kang, Dong, Ju, & Zhang, 2024; Liang & Futou, 2022).

These challenges emphasize the necessity for a systematic review of the current literature to identify trends, address gaps and offer practical insights for future researchers and stakeholders. This research is motivated by the growing interest in the role of blockchain in investment decision-making and the need to consolidate existing knowledge. Previous studies have examined various aspects of blockchain applications in investment, such as its impact on the green supply chain (Liu, Long, Song, & He, 2020), corporate governance (Autore *et al.*, 2021) and renewable energy investment (Stekli & Cali, 2020).

Recently, a bibliometric mapping of blockchain research in accounting and auditing has mapped the main channels, collaboration networks and thematic clusters and proposed a research roadmap (Hassanein, Benameur, Mostafa, Al-Shattarat, & Magar, 2025). However, despite this expansion, the literature remains fragmented across various industries, emphasizing the need for a synthesis focused on the investments provided by this review. For example, research by Xu and Duan (2022) highlights blockchain's potential to enhance green investments through greater transparency, meanwhile, Khalid, Su, Weiwei, Voinea, and Srivastava (2024) emphasize its role in boosting corporate investment efficiency. Although there are contributions, there is still a lack of systematic reviews that integrate findings across various sectors and provide a comprehensive understanding of blockchain's impact on investment strategy.

This research addresses the gap by conducting a systematic literature review (SLR) that integrates findings from several fields, such as supply chain management, corporate finance, sustainable development and regulatory frameworks. By taking these steps, this study aims to present a comprehensive framework to understand the relationship between blockchain and investment. Although numerous studies have examined blockchain applications in investment, systematic reviews that integrate findings across sectors remain scarce. For instance, Alshareef (2022) investigates blockchain's potential in education, whereas Msoughi *et al.* (2024) analyze its function in green finance. However, these studies have a limited scope and fail to offer a unified view on blockchain's impact on investment decision-making. In addition, existing reviews frequently overlook the challenges and limitations of blockchain adoption, including scalability problems, regulatory restrictions and high implementation expenses (Avci & Erzurumlu, 2023). This study aims to fill this gap by offering a systematic review that highlights blockchain's benefits in investment and identifies key challenges and directions for future research. The strength of this research lies in its comprehensive approach, which integrates findings from various disciplines and offers practical insights for stakeholders. By consolidating existing knowledge, this study deepens understanding of the role of blockchain in investment and guides future research.

Theoretical gap: although many studies link blockchain with green supply chains, corporate finance and Islamic social finance, the literature remains fragmented. It rarely integrates these domains into a single lens focused on investment. Practical gaps: decision-makers, particularly SMEs and social impact organizations, lack transparent governance, interoperability and regulatory alignment guidelines when implementing blockchain to enhance investment efficiency and transparency. Our review addresses this gap by consolidating cross-sector findings and developing an integrative agenda for investors, institutions and policymakers. Contributions: this review contributes to the existing literature by (1) integrating cross-sector evidence into a single investment-focused framework; (2) recognizing the mechanisms and boundary conditions linking blockchain features with investment outcomes, namely information quality/auditability, contracting and agency cost reduction through contracts, as well as market access/tokenization and (3) presenting operational guidance on governance choices, interoperability standards and regulatory adaptations tailored for SMEs and social impact.

Through the perspective of information asymmetry and agency cost theory, this mechanism becomes more comprehensible. Blockchain plays a role in improving information quality, enforcing contracts and reducing opportunistic behavior between managers and investors. In this way, blockchain technology strengthens governance structures and effectively enhances investment efficiency across various sectors.

This research investigates the relationship between blockchain and investment and potential future research directions. Consequently, the researcher formulates the problem to address the following questions:

RQ1. What are the literature trends on blockchain and investment relationship investigation over time?

RQ2. What are the key findings from the discussions in the blockchain and investment relationship investigation research?

RQ3. What are some potential future research directions on blockchain and investment relationship investigation?

To address these questions, Section 2 details the methods and explains our search, screening and coding procedures. Based on the resulting dataset, Section 3 first opens with a descriptive analysis (3.1), then deepens the synthesis through content analysis (3.2) and guided by these insights, outlines directions for future research (3.3). Finally, Section 4 summarizes implications and limitations.

2. Methods

This study combines a qualitative design with a systematic review approach. We used SLR with interpretative content analysis through the preferred reporting items for systematic reviews and meta-analyses (PRISMA) model modified by Zakaria, Ahmi, Ahmad, and Othman, (2021) and we followed the PRISMA flow diagram model by Alimusa, Ratnasari, and Hasib (2024). A detailed flow diagram of the search strategy is presented in Figure 1.

2.1 Data search criteria and strategy

In our initial review, we searched the Scopus database. The search was conducted on March 01, 2025 and was limited to articles, journals and the English language. The search was conducted using the keywords "blockchain" and "investment". The authors used keyword filters in the Scopus database based on 'title, abstract and keywords' as well as 'title' alone. Filtering was carried out on related articles published from 2019 to 2025 related to blockchain and investment. The initial search data collected were 116 articles from the Scopus database. This research only utilized the Scopus database, which may limit the inclusion of unindexed or grey literature. Future studies could expand the search scope to other databases, such as Web of Science or Google Scholar, to enhance completeness and comparability. The detailed search criteria and strategy are summarized in Table 1.

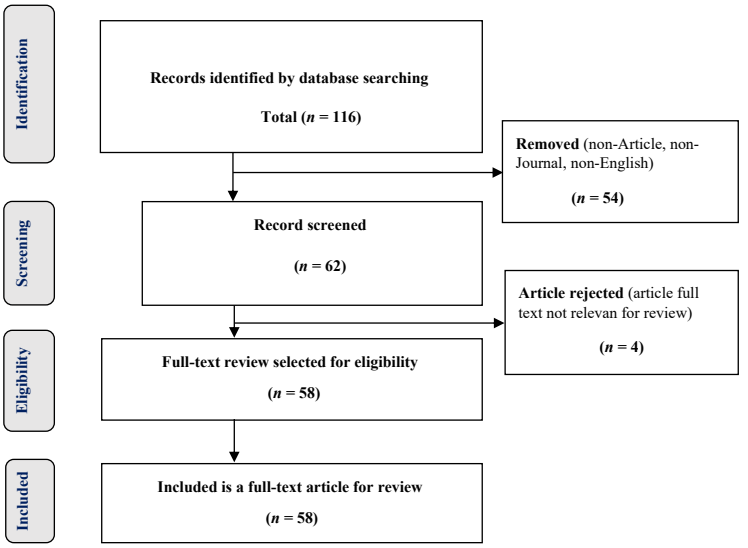

Figure 1. Flow diagram of the search strategy. **Source:** Authors' elaboration

Table 1. Data search criteria and strategy

Source (query)	Keyword search	Inclusion criteria	Exclusion criteria
Scopus (Article Title)	"Blockchain" and "Investment"	Limit to article, journal, English	Conference paper, book/chapter, review, non-journal, no relevance to the topic for review, article full text inaccessible, non-WoS index core correlation

Source(s): Authors' elaboration adopted from Alimusa *et al.* (2024).

Three search criteria were applied to ensure the articles' quality and the review's reliability. After limiting the results to English-language journal articles and adopting the inclusion-exclusion criteria of Indarti, Lukito-Budi, and Islam (2020), a total of 116 records were obtained from Scopus. We removed 54 non-articles, non-journals, or non-English records, leaving 62 records for screening. After assessing titles and abstracts and checking the complete text, four articles were excluded because the full content was irrelevant to the review topic. Thus, 58 articles qualified and were included in the review. The PRISMA flow diagram in Figure 1 summarizes the steps and procedures of this SLR.

2.2 Tools and data analysis

Analyzed 58 full-text articles subject to review, all obtained from the Scopus database and conducted an initial bibliometric review to complement the SLR and content analysis. In the bibliometric review, we used R-Studio, a biblioshiny tool developed by Aria and Cuccurullo (2017), to calculate key data from all full-text articles to be reviewed, annual publication trends and the ten highest-impact journals. Harzing's Publish or Perish (PoP) software calculated document citation analysis by Harzing (2011). In the second stage, a SLR and content analysis were conducted to assess the theories and methods presented in the selected articles. The articles were then manually reviewed based on their final full-text content, including topic, abstract, methods, theories and key findings. Therefore, this study follows the SLR method by Alimusa *et al.* (2024) and Indarti *et al.* (2020), where the content analysis process involves reading the title, abstract and key findings of each article to ensure that the article meets the objectives of this study.

3. Results and discussion

3.1 Descriptive analysis

To answer RQ1, this section describes the dataset to illustrate publication trends and literature-related developments related to the topic. Table 2 presents the main information from the dataset about the topic in the Scopus database. Articles published related to blockchain and investment began to be discussed in 2019 (Cong, 2019) about blockchain for investment professionals and the application of blockchain technology in various aspects of investment, such as real estate, supply chain and carbon finance (Avci & Erzurumlu, 2023; Li *et al.*, 2022;

Table 2. The main information of the dataset

Description (metrics)	Result (data)
Publication years (period)	2019–2025
Total documents	58
Number of citations	791
Citations per year	131.83
Average citation per paper	12.76
Document average age	2.27
h_index	15
g index	26
Author keyword	198
Author	185
Sources	54
Authors of single-authored docs	5
International co-authorship	20.97%
Co-author per doc	3.26
Annual growth rate	30.77%

Source(s): Authors' elaboration

Zhu, Duan, & Sarkis, 2025). Our findings show a significant increase in average annual growth (30.77%) and total citations (791 TC). Based on 58 review articles from 10 journals, there are 31 authors with international collaboration (20.97%), average citations per year (131.83) and citations per paper (12.76). This indicates that the literature on blockchain and investment continues to grow rapidly.

Figure 2 shows the annual growth of publications related to blockchain and investment. Although the literature on blockchain and investment began in 2019, this topic was only rediscovered through research in 2021 and 2022 (Liu *et al.*, 2021b). They discuss investment strategies and the application of blockchain technology in port supply chains, while Xin, Liu, Wang, Chen, and Chen (2022) explore the use of blockchain in investment in environmentally friendly products supported by government subsidies. In addition, there was a significant increase in 2023, as demonstrated by the study by Baptista, Januario, and Cruz (2023), which assessed public perceptions of blockchain technology in property investment. The peak of publication growth was reached in 2024, as described in the research by Zhang, Zheng, Jia, and Liu (2024), which examined pricing strategies and blockchain technology investments in mixed carbon trading schemes.

Therefore, research on blockchain and investment is predicted to continue to develop in the future, both among academics and in practice. Thus, research on blockchain and investment will continue to develop in the future, both among researchers and practitioners. This development indicates that blockchain technology is increasingly regarded as an important tool in enhancing efficiency, transparency and sustainability in various investment sectors, including supply chains, property and carbon trading. The increase in the number of publications also indicates the interest of researchers and practitioners in exploring the potential of blockchain in the context of sustainable and innovative investment.

Subsequently, Table 3 presents the most popular journals related to this topic. We ranked the top ten sources from 28 journals according to total publications (TP). The *Ocean and Coastal Management* is the most popular journal (3 TP), followed by *Sustainability* (Switzerland) with the same number of publications (3 TP), as well as the *International Journal of Intelligent Systems* and *Applications in Engineering* (2 TP) and the *Journal of Computational and Applied Mathematics* (2 TP). Figure 3 illustrates that these four journals are included in the results cluster based on Bradford's law. Therefore, based on total publications and citations, the primary sources related to waqf and entrepreneurial financing development come from high-reputation journals (Q1 and Q2) and the Emerald Group publisher.

Table 4 presents the most cited documents investigating the linkage between blockchain and investment and future research directions. Based on the total documents analyzed (58 TP), Liu *et al.* (2020) are the primary authors of the document with the highest citations in this topic (127 TC). This document discusses investment decisions and coordination in the green

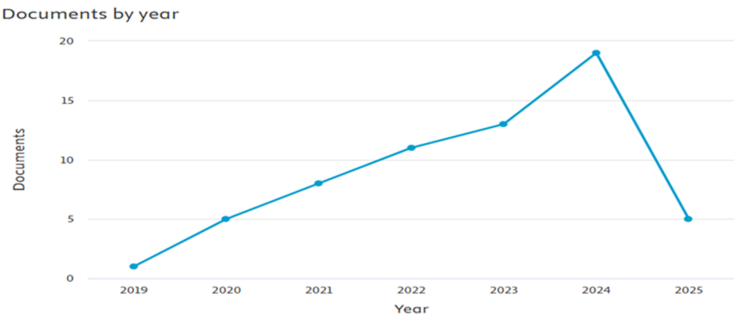

Figure 2. Annual distribution of publications. **Source:** Authors' elaboration

Table 3. Top 10 sources title

No.	Source title	Publisher	TP	%	TC	C/P	*h*	*g*
1	*Ocean and Coastal Management*	Elsevier B.V.	3	5.17	52	17.33	3	3
2	*Sustainability (Switzerland)*	Multidisciplinary Digital Publishing Institute (MDPI)	3	5.17	8	2.67	2	2
3	*International Journal of Intelligent Systems and Applications in Engineering*	Auricle Global Society of Education and Research	2	3.45	4	2.00	1	2
4	*Journal of Computational and Applied Mathematics*	Elsevier B.V.	2	3.45	55	27.5	2	2
5	*Journal of Industrial Engineering and Engineering Management*	Shejiang University	2	3.45	20	10.00	2	2
6	*Mathematics*	Multidisciplinary Digital Publishing Institute (MDPI)	2	3.45	15	7,50	2	2
7	*Agriculture (Switzerland)*	Multidisciplinary Digital Publishing Institute (MDPI)	1	1.72	8	8.00	1	1
8	*Annals of Operations Research*	Springer Netherlands	1	1.72	13	13.00	1	1
9	*Archives of Computational Methods in Engineering*	Springer Netherlands	1	1.72	67	67.00	1	1
10	*China Journal of Accounting Research*	Sun Yat-sen (Shongshan) University	1	1.72	17	17.00	1	1

Note(s): TP = total number of publications; TC = total citations; C/P = average citations per publication; and *h* = h-index; *g* = g-index

Source(s): Authors' elaboration

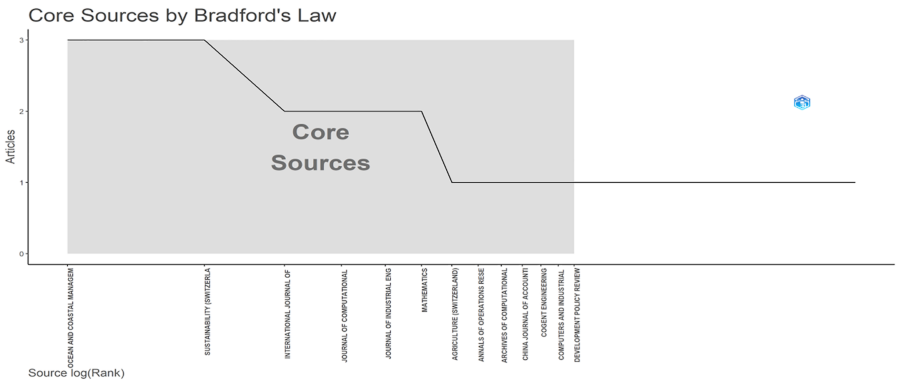

Figure 3. Bradford's law (journal rank). **Source:** Authors' elaboration

agri-food supply chain, considering blockchain-based information services and big data. The following popular document is Li *et al.* (2022) with a total of citations (72 TC), which examines the role of blockchain and fairness in green investment in a sustainable supply chain. Furthermore, another highly cited document is Xu and Duan (2022) with a total of citations (71 TC), exploring green pricing and investment for green products with government subsidies, as well as Liu, Lv, Dinçer, Yüksel, and Karakuş (2021a) with a total of citations (67 TC), discussing the selection of renewable energy alternatives for green blockchain investment using an IT2-based fussy model.

The main papers include Xie, Li, and Zhao (2020) with 39 TC, who study blockchain-based financial investment using a learning network algorithm. Autore *et al.* (2021) with 32 TC evaluate speculation and value creation from blockchain-based corporate investment.

Table 4. Top ten most cited documents

Author(s)	Title	TC	C/Y	Year	Source
Liu *et al.* (2020)	Investment decision and coordination of green agri-food supply chain considering information service based on blockchain and big data	127	31.75	2020	*Journal of Cleaner Production*
Li *et al.* (2022)	Green investment in a sustainable supply chain: The role of blockchain and fairness	72	36.00	2022	Transportation Research Part E: Logistics and Transportation Review
Xu and Duan (2022)	Pricing and greenness investment for green products with government subsidies: When to apply blockchain technology?	71	35.50	2022	Electronic Commerce Research and Applications
Liu *et al.* (2021a)	Selection of Renewable Energy Alternatives for Green Blockchain Investments: A Hybrid IT2-based Fussy Modeling	67	22.33	2021	*Archives of Computational Methods in Engineering*
Xie *et al.* (2020)	Blockchain financial investment based on deep learning network algorithm	39	9.75	2020	*Journal of Computational and Applied Mathematic*
Autore *et al.* (2021)	Blockchain speculation or value creation? Evidence from corporate investments	32	10.67	2021	*Financial Management*
Wen, Liao, & Emrouznejad, (2021)	Information representation of blockchain technology: Risk evaluation of investment by personalized quantifier with cubic spline interpolation	29	9.67	2021	*Information Processing and Management*
Kumari and Devi (2023)	Blockchain technology acceptance by investment professionals: a decomposed TPB model	27	27.00	2023	*Journal of Financial Reporting and Accounting*
Xin *et al.* (2022)	Investment strategy for blockchain technology in a shipping supply chain	25	12.50	2022	*Ocean and Coastal Management*
Shahzad, Ghaemi Asl, and Tedeschi (2023)	Is there any market state-dependent contribution from Blockchain-enabled solutions to ESG investments? Evidence from conventional and Islamic ESG stocks	18	18.00	2023	*International Review of Economics and Finance*

Source(s): Authors' elaboration

Additionally, Wen *et al.* (2021) with 29 TC discuss the role of blockchain information technology in investment risk assessment, while Kumari and Devi (2023) with 27 TC investigate blockchain adoption by investment professionals through a detailed TPB model. Other related studies include Xin *et al.* (2022) with 25 TC, who analyze blockchain technology investment strategies in the delivery supply chain. Shahzad *et al.* (2023) with 18 TC assess blockchain-based contributions to ESG investments, including conventional and Islamic ESG stocks. Therefore, research on blockchain and investment is rapidly developing, covering various fields such as green supply chains, renewable energy, finance and sustainable investment. This trend indicates that blockchain technology is increasingly accepted as a key tool for enhancing efficiency, transparency and sustainability across various investment sectors.

3.2 Content analysis of the review

3.2.1 Blockchain challenges to SME financing. Implementing blockchain in SME financing faces three barriers: cost, complexity and capability. Li *et al.* (2022) how that installation, maintenance and transaction fees raise the effective cost of capital for small firms. Liu *et al.* (2021a) emphasizes that new energy can mitigate environmental externalities only with regulatory certainty and a reliable supply. Even then, Xu and Duan (2022) find that increased transparency and traceability often do not offset the integration burden and skill demands. Overall, the evidence shows that the benefits are conditional and a coordinated response is needed in the form of targeted fiscal incentives, vendor-neutral technical training, interoperability standards and strict data protection.

Complementary technologies support integrating deep learning with blockchain to expand access to financial services, although costs and skills remain significant constraints. Not all investments yield sustainable value, as some adoptions are speculative, emphasizing the importance of linking projects with clear and responsible strategies rather than merely following trends (Autore *et al.*, 2021). From a risk management perspective, Wen *et al.* (2021) proposed a quantitative method that utilizes personalized quantifiers with cubic-spline interpolation to obtain investor preferences that are useful in comparing various application areas and preventing speculative allocation. Infrastructure challenges still include high initial integration and customization costs and ongoing hardware and connectivity costs, especially in the informal (Alimohammadlou & Alinejad, 2023; Mosupye-Semenya, 2023). Evidence from green supply chains suggests that transparency can increase lender trust (Liu *et al.*, 2020). However, its impact depends on reducing implementation costs and closing skills gaps at the firm level (Kaur *et al.*, 2024; Kumar, Rani, Rani, & Rani, 2024). A practical approach is carried out through risk-based feasibility studies with measurable indicators, small-scale trials and collaboration with independent vendors, supported by balanced regulations and effective financial incentives.

Regulatory challenges in blockchain adoption for SME financing. Implementing blockchain technology for financing SMEs encounters numerous regulatory obstacles, particularly in developing countries. These challenges include:

(1) Lack of a clear legal framework

The main obstacle is the lack of a clear and comprehensive legal framework regulating blockchain technology. Uncertainty in these regulations can hinder SMEs from adopting blockchain due to concerns about non-compliance and potential legal consequences (Ante, 2020; Rudneva, Kantor, Shamonina, & Shamonin, 2022). Without legal guidance, SMEs may struggle to understand the legal implications of using blockchain for financing.

(2) Technology barriers

SMEs often face significant technological barriers, such as a shortage of blockchain experts and high costs associated with adopting new technology (Alimohammadlou & Alinejad, 2023; Kaur *et al.*, 2024). These barriers are exacerbated by limited regulatory support, making blockchain integration into SME operations challenging.

(3) Financial and budgetary constraints

Implementing blockchain technology can be costly for SMEs with limited budgets. The high initial investment and ongoing maintenance costs can be prohibitive without incentives or regulatory support (Su & Cao, 2023).

(4) Regulatory uncertainty

In many developing countries, the regulatory framework for blockchain is still in the developmental stage. However, this uncertainty causes risk-averse behaviour among SMEs, which may hesitate to invest in blockchain without explicit assurances regarding stability and

regulation (Jin & Liu, 2024). Governments must establish clear guidelines and policies to encourage blockchain adoption.

SMEs benefit from blockchain's clearer audit trails, faster settlements and fewer errors. In many developing countries, weak regulations and poor enforcement make owners hesitant to invest (Alimohammadlou & Alinejad, 2023; Rudneva *et al.*, 2022). Subsidies and training also boost adoption among smaller firms (Li *et al.*, 2022). These measures help SMEs move from interest to adoption and realize blockchain's benefits (Ante, 2020; Jin & Liu, 2024). These measures help SMEs move from interest to adoption and realize blockchain's benefits.

3.2.2 Integration of blockchain and social investment. To integrate blockchain technology with social investment mechanisms such as zakat management, cash waqf linked sukuk (CWLS) and social business models.

(1) *Blockchain in zakat management*

Blockchain technology has great potential to make zakat management more transparent, easily traceable and secure (Mohd Nor, Abdul-Majid, & Esrati, 2021; Nazeri *et al.*, 2023). Consequently, public trust increases and collecting and distributing zakat becomes more efficient. Although many practitioners and academics are supportive, zakat institutions and users still require time to adapt and enhance their capacity Various proposed models suggest the immediate integration of blockchain to improve efficiency and build trust (Juniati & Widiastuti, 2024). With a more transparent system, zakat recipients can be motivated to become zakat payers.

(2) *Blockchain and cash waqf linked sukuk (CWLS)*

CWLS presents as an innovative financing solution, combining cash waqf and sukuk to create a positive social and economic impact (Kunhibava, Muneeza, Mustapha, Khalid, & Sen, 2023). In this way, the funds collected are not only for charitable purposes but also stimulate economic activity, especially in post-pandemic recovery situations. (Kunhibava *et al.*, 2023). However, the implementation of CWLS is not easy because it faces a complex legal and regulatory framework, as experienced in Malaysia. Therefore, regulatory improvements are crucial for CWLS to develop and succeed.

(3) *Social business model*

Sustainability and trust: blockchain and smart contracts can enhance social business sustainability by ensuring transparency, lowering transaction costs and building stakeholder trust (Devine, Jabbar, Kimmitt, & Apostolidis, 2021). This aligns with social business principles promoting social and economic goals. Practical applications: blockchain in social business models aids microfinance by boosting trust, transparency and auditability, though challenges like technology adoption and infrastructure remain. Integration requires developing legal, regulatory, Sharia and governance frameworks crucial for success (Al-Saudi, 2023; Kunhibava *et al.*, 2023). Capacity development through education and training on blockchain benefits and challenges is vital to maximize its impact (Dadhich *et al.*, 2024). Collaborative efforts among Islamic financial institutions, technology experts and policymakers are needed to create an effective blockchain integration model (Moppratama, Alamsyah, & Tricahyono, 2024). Table 6 presents the blockchain and social investment integration mechanism. The integration mechanisms are summarized in Table 5.

Integrating blockchain technology with zakat management, CWLS and social business models offers significant potential to improve transparency, trust and efficiency. However, successful implementation requires addressing regulatory challenges, building capacity among stakeholders and encouraging collaborative efforts.

However, several criticisms and challenges have been identified in the literature:

Table 5. Blockchain and social investment integration mechanisms

Mechanism	Benefits of blockchain integration	Challenges and considerations
Zakat management	Transparency, trust, efficiency, better management	Readiness, capacity-building, stakeholder support
Cash waqf linked sukuk (CWLS)	Innovative financing, economic revival, fund mobilization	Legal and regulatory frameworks, decentralization
Social business models	Sustainability, trust, reduced transaction costs, transparency	Technology adoption, infrastructure development

Source(s): Authors' elaboration

(1) Zakat management

- Transparency and trust issues:

The potential of blockchain to enhance transparency and trust in zakat management has been extensively acknowledged. However, the limited understanding and The legal status of cryptocurrencies and the regulatory framework governing blockchain technology remain unclear, potentially hindering their implementation (Juniati & Widiastuti, 2024; Mohd Nor *et al.*, 2021; Nazeri *et al.*, 2023)

The legal status of cryptocurrencies and the regulatory framework for blockchain technology remains uncertain, which may hamper its implementation (Zulfikri *et al.*, 2023).

- Operational challenges:

Incorporating blockchain technology requires significant changes in the operational procedures of zakat institutions. This includes creating new regulatory, legal and governance frameworks to support blockchain implementation (Al-Saudi, 2023; Nazeri *et al.*, 2023). A user-friendly and widely accepted system by zakat payers and beneficiaries is essential, yet such a system remains inadequate (Juniati & Widiastuti, 2024)

(2) Cash waqf linked sukuk (CWLS)

- Regulatory and legal frameworks:

The successful implementation of blockchain-based CWLS requires a robust legal and regulatory framework. The absence of such a framework may hamper the scalability and wider adoption of this instrument (Al-Saudi, 2023). The development of the architectural infrastructure to support blockchain-based CWLS is still in progress, indicating that the technology is not yet fully mature for widespread use (Al-Saudi, 2023)

- Stakeholder readiness:

Similar to zakat management, the readiness of stakeholders, including waqf institutions and investors, to adopt blockchain technology is a critical challenge. There is a need for education and training to build confidence and understanding among these stakeholders (Al-Saudi, 2023)

(3) Social business models

- Innovation and adoption barriers:
- Although blockchain provides innovative approaches for social business models, its adoption remains slow due to technological complexity and the requirement for substantial modifications in existing business processes (Kasmon, Ibrahim, Daud, Raja Hisham, & Dian Wisika Prajanti, 2025; Kunhibava, Muneeza, Mustapha, Khalid, & Kiran, 2024). The risk of blockchain misuse for fraudulent activities and

the absence of adequate consumer protection mechanisms represent critical challenges needing resolution (Kasmon *et al.*, 2025)

- Economic and social impact:

The economic and social benefits of integrating blockchain into social business models are promising, but there is little empirical evidence to support these claims. Further research is needed to understand the long-term impact of blockchain on social business models (Kunhibava *et al.*, 2024)

Integration of blockchain technology into Islamic social finance, including zakat management, CWLS and social business models, presents both opportunities and challenges. While blockchain can enhance transparency, trust and efficiency, significant barriers such as regulatory uncertainty, stakeholder readiness and operational challenges need to be addressed. Future research and development efforts should focus on creating a robust legal framework, user-friendly systems and empirical studies to validate the long-term benefits of blockchain integration in these areas (Juniati & Widiastuti, 2024; Kasmon *et al.*, 2025).

3.3 Future research directions

This study summarizes potential future research directions (*RQ3*). We identify significant gaps in the literature with greater originality and explore recommendations for future research.

(1) Future research focuses on developing an evaluation framework: There is a need to create a scientific model to assess investments in blockchain information management systems. This involves designing a theoretical framework grounded in investment criteria used by business angels to support managers and investors in decision-making (Davydovitch, Vasiljeva, Novinkina, & Haidabrus, 2021).

(2) Investment criteria analysis: Future research should focus on identifying and analyzing key groups of investment criteria specific to blockchain investments to provide a structured approach to evaluating potential returns and risks (Davydovitch *et al.*, 2021)

- Improving sustainable investment practices: Research should examine how blockchain enhances transparency, minimizes fraud and expands accessibility for small investors in sustainable investing. This involves evaluating current applications, advantages and challenges of blockchain within these areas (Gupta, Gupta, Kiran, & Choudhary, 2024)
- Case studies and real-world applications: further research should document successful blockchain implementations in sustainable investing to offer practical insights and guidance for future initiatives (Gupta *et al.*, 2024)
- AI and blockchain integration: Investigating the combined application of AI and blockchain in financial services reveals novel models for banking, lending and asset management. This involves analyzing the advantages and challenges of such integration and its effects on the financial sector (Hosen, Thaker, Subramaniam, Eaw, & Cham, 2023).
- Quantum computing and blockchain: Research should investigate the implications of quantum computing for blockchain security and examine how quantum technology can enhance blockchain systems. This includes assessing the potential threats and opportunities arising from quantum advancements (Yan, Xiang, & Cui, 2022)
- Developing a waqf-based crowdfunding platform remains a key priority for further research, particularly in financing MSMEs and projects using an Islamic

crowdfunding model for entrepreneurship empowerment programs (Khairuddin & Ishak, 2023).

- Studies on MSME owners' motivation and behavior are crucial for better support programs (Maulina, Dhewanto, & Faturohman, 2023). This area is supported by research on mixed Islamic finance for SMEs (Khan & Badjie, 2022), waqf models in Indonesia (Ascarya, Hosen, & Rahmawati, 2022) and their role in empowering young entrepreneurs (Sahiq *et al.*, 2016).
- Blockchain in financial reporting: examining how blockchain influences financial reporting and transaction processing, especially regarding transparency and fraud prevention, is crucial. This involves analyzing investors' asymmetric reactions to various blockchain-based investment opportunities (Kayani, 2025)
- Cryptocurrency market dynamics: research should persist in examining the financial factors that affect cryptocurrency capitalization and its potential as an investment asset. This involves creating predictive models to analyze market trends and assess investment feasibility (Baur & Dimpfl, 2021).
- Sector-specific applications: identifying and documenting blockchain implementations across industries such as finance, logistics and healthcare offers valuable insights into its transformative potential. This involves examining the development of blockchain applications and their effects on business models (Vella, Gastaldi, & Ghezzi, 2023).

In this research direction, future studies can substantially improve understanding of the relationship between blockchain technology and investment, ultimately guiding strategic decisions for researchers, practitioners and policymakers.

4. Conclusion and research implications

4.1 Conclusion

This research reveals that studies on blockchain applications in investment decision-making and performance continue to grow rapidly and gain broader academic recognition in several prestigious journals. The research focuses on more measurable evidence of applications in finance, supply chain and social financing.

The synthesis of findings indicates three consistent mechanisms through which blockchain creates investment value: (1) enhanced information quality and auditability that reduce information asymmetry. (2) coordination and contract enforcement through smart contracts that reduce transaction and agency costs and (3) opening market access and alternative financing schemes (for example, tokenization) that expand the investor base, including SMEs. The main barriers that often arise are initial costs and the complexity of integration, capability gaps (human resources/infrastructure) and regulatory uncertainty, particularly in the cross-border context. In social financing (zakat, waqf/CWLS, social business models), operational transparency has increased, but adequate governance and legal certainty are required for its economic value to be realized.

Going forward, the priority research agenda includes the development of an auditable blockchain-based investment evaluation framework (criteria, risk–return metrics), cross-industry empirical studies and well-documented case studies (what works). In addition, the integration of AI-blockchain in financial services, resilience to quantum computing, the design of waqf-based crowdfunding platforms for SMEs, behavioral studies of business actors and impacts on financial reporting and anti-fraud measures are also key focuses. Blockchain acts as a trust infrastructure that generates value if governance, standards and incentives are integrated, but value diminishes if costs, capacity and regulation are inadequate.

4.2 Implications

4.2.1 Theoretical. This study develops an understanding of the mechanisms of blockchain value creation in investment through three main channels: improved information quality, enhanced coordination and contract enforcement and expanded market access. Furthermore, the measurement framework designed to monitor audit trail completeness, transaction costs and other costs, including financing feasibility and capital access, is considered a key factor affecting effectiveness in various contexts.

4.2.2 Managerial practice. At the practical level, organizations must design implementation governance (licensing, data standards and audit trails) before go-live to ensure that the informational and contractual benefits outweigh the integration costs. Prioritize use cases with high transaction costs, such as green supply chains, carbon markets and trade finance, to ensure realistic payback periods. Strengthen internal capabilities through cross-functional IT, finance and legal teams and utilize managed services with increasingly developed competence.

4.2.3 Regulatory policy.. Regulatory policy requires a proportional legal framework and cross-border regulation to ensure security and oversight. Regulators must establish interoperability standards, provide fiscal incentives and develop capacity-building programs to reduce the capability gap of SMEs while distributing the benefits of technology equitably. (See Table 6)

Table 6. Practical implications

Stakeholder	Practical implication
Investors	Utilizing blockchain-based audit trails to enhance investment transparency, improve governance and reduce information asymmetry in decision-making
SMEs	The use of blockchain for more efficient financing, the automatic implementation of smart contracts and enhanced access to investment mechanisms and alternative funding sources
Regulators	Developing cross-border regulations and interoperability standards to ensure a secure, compliant and scalable blockchain-based investment environment
Policymakers	Developing fiscal incentives and sustainable frameworks to encourage the comprehensive adoption of blockchain technology within the financial and social investment sectors

4.3 Limitations of the study

Our review has limitations that readers should consider. We restricted the search to 2019–2025 and primarily used Scopus, so relevant studies outside this time frame, in other languages or indexed in other sources may not be included. This synthesis focuses on green supply chains and sustainable investment, so its implications may not apply to unrelated domains. We do not discuss the differences in regulations and cultures between countries in detail, nor technical issues such as scalability, interoperability and energy consumption. The evidence is sourced from secondary data, not primary data or case studies, reducing the strength of our arguments. Given the rapid advancements in blockchain research, some challenges and opportunities may lie beyond the scope of this review. Therefore, the findings should be read critically and re-evaluated as new evidence emerges.

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